



Unmanned Vehicles

The **Subsurface Autonomous Mapping System (SAMS)** is a free-swimming, programmable and redirectable Autonomous Underwater Vehicle (AUV) capable of preprogrammed independent operations from a host platform or shore facility. It is a full-ocean-depth (6000-meter) AUV with integrated physical oceanography and bottom-mapping sensors.

Developed for the Naval Oceanographic Office (NAVOCEANO) by the Woods Hole Oceanographic Institution Ocean Systems Laboratory, SAMS is a new NAVOCEANO capability for deep-sea oceanographic data collection.

The SAMS vehicle is designed to conduct two types of missions: independent physical oceanographic data collections and side-scan sonar bottom-mapping surveys. It has a suite of full-ocean-depth-rated oceanographic and bottom survey sensors. SAMS can collect 10-12 hours of side-scan and oceanographic data or up to 16 hours of oceanographic data with the side-scan sonar disabled. Cruising at 4 knots, the vehicle can survey more than 40 nautical miles during mapping missions and nearly 65 nautical miles during oceanography missions. The vehicle's range, its ability to conduct preprogrammed and redirected missions and its multipurpose sensor suite allow NAVOCEANO to conduct large-scale, deep-water, oceanographic and ocean bottom feature exploration efficiently and flexibly.

Two rechargeable lithium-ion battery assemblies supplying 8 kWh at 25 V power the SAMS vehicle and can sustain vehicle operations for at least 12 hours. After vehicle recovery the batteries can be changed within 2 hours or completely recharged within 8 hours. SAMS is a roll-on/roll-off survey tool that augments the capabilities of NAVOCEANO's ships while providing an efficient means of collecting relevant data.



SAMS Primary Characteristics

Diameter	24 inches
Length	13 feet, 7.2 inches
Range	40-65 nmi@4 knots
Power Source (initial)	2 rechargeable lithium-ion battery assemblies (8 kWh, 25 V)
Launch and Recovery	LARS, stern launched and recovered
Fixed Buoyancy	Neutral buoyant
Trim Control	Fixed ballast
Communications	Acoustic pulse
Control	Preloaded in survey, redirectable during mission
Control Surfaces	horizontal and vertical fins
Drive Motor	Electric
Propulsion	24-inch Carbon fiber propeller

SAMS Instrumentation

Side-Scan Sonar	Marine Sonics 300-kHz system
GPS	Preloaded with mission parameters
CTD	Sea-Bird Electronics
Pressure	Paroscientific Precision Pressure Sensor
OBS	Sea Tek
ADCP	RD Instruments

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